

DETECTION OF FOREST INSECT ACTIVITY
ON THE GEORGE WASHINGTON NATIONAL FOREST , VA.

BY

CHARLES W. DULL

INTRODUCTION

AN AERIAL SURVEY TO DETECT FOREST INSECT AND DISEASE ACTIVITY WAS CONDUCTED ON THE GEORGE WASHINGTON NATIONAL FOREST, VIRGINIA AND WEST VIRGINIA, ON JULY 5-6, 1978. AN ICE STORM DAMAGED APPROXIMATELY 10,000 ACRES OF TIMBER ON THE NATIONAL FOREST IN MARCH. SPECIAL EMPHASIS WAS PLACED UPON SURVEYING AREAS OF STORM DAMAGED TIMBER TO DETERMINE IF INSECT INFESTATIONS WERE DEVELOPING IN OR ADJACENT TO THE DAMAGED TREES. *Ips* SPP. BARK BEETLES ARE ATTRACTED TO DAMAGED PINES AND MAY INFEST HEALTHY PINES ADJACENT TO DAMAGED PINES. THE AERIAL SURVEY CREW INCLUDED: GEORGE BLOMSTROM AND LARRY BONNER, DRY RIVER RANGER DISTRICT; RONALD SWAN, LEE RANGER DISTRICT; JOHN ROBERTS, WARM SPRINGS RANGER DISTRICT; AND CHARLES DULL, FIDM.

A SURVEY TO DETECT THE PRESENCE OF GYPSY MOTH IN AREAS CONSIDERED POTENTIAL INFESTATION CENTERS WAS INCORPORATED INTO THE GROUND CHECKS FOR DAMAGE OBSERVED DURING THE AERIAL SURVEY. THE RECREATIONAL VEHICLES OF THE TRAVELING PUBLIC INTO HIGH VISITOR USE AREAS COULD EASILY RESULT IN ACCIDENTALLY TRANSPORTING VIABLE GYPSY MOTH LIFE FORMS AS "HITCH-HIKERS".

ANOTHER OBJECTIVE OF THE GYPSY MOTH SURVEY WAS TO DETERMINE IF INTRODUCED GYPSY MOTH PARASITES WERE ESTABLISHED AS SECONDARY HOSTS IN POPULATIONS OF NATIVE FOREST INSECTS.

METHODS

AERIAL. AREAS WITH STORM DAMAGED TIMBER WERE DELINEATED PRIOR TO THE AERIAL SURVEY. THE AERIAL SURVEY WAS CONDUCTED ON JULY 5-6, 1978. STANDARD SKETCHMAP PROCEDURES WERE EMPLOYED WITH 100% COVERAGE OVER STORM DAMAGED AREAS AND 25% COVERAGE ON THE REMAINDER OF THE FOREST. APPROXIMATELY 1,795,000 ACRES WERE SURVEYED. THE AERIAL SURVEY WAS TIMED TO COINCIDE WITH THE PERIOD OF MAXIMUM GYPSY MOTH DEFOLIATION, IF PRESENT.

GROUND DETECTION. IN APRIL, 1978, FIDM PERSONNEL PLACED 20 BURLAP BAND TRAPS (FIG. 1) AT EACH OF SEVEN RECREATION AREAS. THESE BANDS SERVE AS RESTING PLACES FOR GYPSY MOTH LARVAE. TRAPS WERE PLACED AT:

1. WOLF GAP
2. TROUT POND
3. HAWK
4. ELIZABETH FURNACE
5. CAMP ROOSEVELT
6. HAZARD MILL
7. SHERANDO LAKE

THE BANDS WERE PLACED ON THE TREES CA. 10 FEET ABOVE THE GROUND WHERE THEY WOULD NOT BE DISTURBED BY THE PUBLIC. THE BURLAP BANDS WERE CHECKED DURING THE WEEKS OF JUNE 12-16 AND JULY 17-21, 1978. ALL BANDS WERE REMOVED FOLLOWING THE SECOND EXAMINATION. ALL LARVAE AND PUPAE FOUND UNDER THE BURLAP BANDS WERE COLLECTED TO DETERMINE THE PARASITES OF NATIVE FOREST INSECT POPULATIONS AS WELL AS THE GYPSY MOTH. SPECIMENS WILL BE HELD IN REARING CONTAINERS UNTIL ADULT OR PARASITE EMERGENCE.

RESULTS

AERIAL. NO RED OR FADING PINES IN AND ADJACENT TO STORM DAMAGED TIMBER WERE OBSERVED. THE MAJORITY OF STORM DAMAGED TIMBER WAS HARDWOOD SPECIES. VAST AREAS OF DAMAGED TIMBER WERE OBSERVED (FIG. 2). MUCH OF THE DAMAGE OCCURRED IN AREAS INACCESSIBLE TO SALVAGE OPERATIONS (FIG. 3). THOUSANDS OF UPROOTED TREES WERE OBSERVED IN AREAS OF HEAVY STORM DAMAGE (FIG. 4).

APPROXIMATELY 55,000 ACRES OF HARDWOOD DAMAGE CAUSED BY THE PERIODICAL CICADA, *Majicicada septendecim* (L.), WERE VISIBLE DURING THE AERIAL SURVEY (FIG. 5). THE INFESTATION WAS WIDESPREAD THROUGHOUT THE SURVEY AREA.

NO GYPSY MOTH DEFOLIATION WAS OBSERVED.

ICE DAMAGE AND DEFOLIATION (OVIPOSITION DAMAGE BY THE PERIODICAL CIDADA) ARE PLOTTED ON THE ATTACHED MAPS.

GROUND. NO LIFE FORMS OF THE GYPSY MOTH WERE DETECTED DURING THE TREE BANDING SURVEY.

GROUND CHECKS REVEALED A DEFOLIATOR COMPLEX CONSISTING OF ENDEMIC POPULATIONS OF THE FALL CANKERWORM, *Alsophila pometaria* (HARR.), FOREST TENT CATERPILLAR, *Malacosoma disstria* HUBNER, AND THE EASTERN TENT CATERPILLAR, *M. americanum* (F.).

MANY SPECIES OF LARVAE AND PUPAE WERE COLLECTED FROM BENEATH THE BURLAP BANDS AND HELD FOR PARASITE EMERGENCE. THE MOST NUMEROUS WERE THE FOREST TENT CATERPILLAR, EASTERN TENT CATERPILLAR, WHITE-MARKED TUSSOCK MOTH, *Hemerocampa leucostigma* (I.E. SMITH), AND VARIOUS NOCTUID MOTHS. INITIAL RESULTS INDICATE APPROXIMATELY 50% OF THE FOREST TENT CATERPILLAR LARVAE COLLECTED WERE PARASITIZED.

SCATTERED STANDS OF BLACK LOCUST WERE BEING DEFOLIATED BY THE LOCUST LEAF MINER *Xenochalepus dorsalis* (THUNBERG).

DISCUSSION AND CONCLUSIONS

DUE TO THE RELATIVELY SMALL AMOUNT OF PINE IN THE STORM DAMAGED TIMBER, *Ips* spp. BARK BEETLE INFESTATIONS WERE NOT OBSERVED DURING THE AERIAL SURVEY.

DEFOLIATION (OVIPOSITION DAMAGE) CAUSED BY THE PERIODIC CICADA SHOULD NOT BE AS HEAVY NEXT YEAR DUE TO THE CYCLIC OCCURRENCE OF THIS INSECT.

ENDEMIC POPULATIONS OF FOREST DEFOLIATORS ARE BEING EFFECTIVELY CONTROLLED BY NATURAL FACTORS SUCH AS PARASITES, PREDATORS, AND A VIRAL DISEASE. SOUTHERN PINE BEETLE ACTIVITY WAS NOT DETECTED.

THE VIRGINIA DIVISION OF FORESTRY REPORTED THAT ALL LIFE STAGES OF THE GYPSY MOTH HAVE BEEN FOUND ALONG THE APPALACHIAN TRAIL IN LOUDOUN COUNTY, VIRGINIA. PARASITES HAVE BEEN RELEASED IN THE INFESTED AREA AND A SPRAY PROJECT TO ERADICATE THE INFESTATION WILL BE CONDUCTED BY THE DEPARTMENTS OF AGRICULTURE IN VIRGINIA AND WEST VIRGINIA IN COOPERATION WITH THE USDA, APHIS (FOR. PEST SURVEY REPT., VA. DIV. FOR., JULY-AUGUST 1978)

IT IS INEVITABLE THAT THE GYPSY MOTH WILL INFEST HARDWOOD FORESTS SOUTH OF THE EXPANDING AREA OF THE GENERAL INFESTATIONS. THE EXACT MAGNITUDE OF THE IMPACT IS NOT KNOWN AT THIS TIME. THE GEORGE WASHINGTON NATIONAL FOREST IS ONLY 50 MILES SOUTH OF WHAT IS NOW CONSIDERED THE ADVANCING FRONT OF GENERAL INFESTATION. IN GENERAL, THE FIRST THREE TO FIVE YEARS AFTER THE INTRODUCTION OF THE GYPSY MOTH INTO A NEW AREA THE INSECTS BECOME GENERALLY DISTRIBUTED AT LOW DENSITIES. AFTER ESTABLISHMENT, A POPULATION EXPLOSION MAY OCCUR THROUGHOUT THE AREA FOR TWO OR MORE YEARS IN SUCCESSION AFTER WHICH A POPULATION COLLAPSE USUALLY OCCURS. THEREFORE, IT IS IMPORTANT TO DETERMINE WHEN THE GYPSY MOTH BECOMES ESTABLISHED IN AN AREA AND MONITOR THE STATUS OF THE POPULATION.

SURVEYS TO DETECT THE PRESENCE OF GYPSY MOTH SHOULD CONTINUE ON THE GEORGE WASHINGTON NATIONAL FOREST. EGG MASS SURVEYS THIS WINTER AND EXPANDED LARVAL-PUPAL SURVEYS NEXT SPRING AND SUMMER SHOULD BE CONDUCTED TO DETERMINE IF AN INFESTATION EXISTS WITHIN THE NATIONAL FOREST. THE LARGE EXPANSE OF SUSCEPTIBLE HARDWOOD HOSTS IN SUCH CLOSE PROXIMITY TO AN ACTIVE INFESTATION COULD CONTAIN LOW DENSITY POPULATIONS OF THE GYPSY MOTH WHICH MIGHT OTHERWISE REMAIN UNDETECTED

NATIONAL FOREST PERSONNEL SHOULD CONTINUE FIELD SURVEILLANCE, ESPECIALLY IN AREAS OF STORM DAMAGED TIMBER.

FOR ADDITIONAL INFORMATION, CONTACT:

FOREST INSECT AND DISEASE MANAGEMENT UNIT
USFS - SOUTHEASTERN AREA

NORTHGATE OFFICE PARK, ROOM 2103 OR
3620 INTERSTATE 85, N.E.
DORAVILLE, GA 30340
TEL: 404-221-4796

P.O. Box 5895
ASHEVILLE, NC 28802
TEL: 704-258-2850, EXT. 625



Fig. 1. Burlap bands encompass large oaks in campgrounds to detect gypsy moth larvae and pupae.



Fig. 2. Aerial view of storm damaged timber along Route 250 between the Dry River and Deerfield Ranger Districts.



Fig. 3. Storm damaged timber in an inaccessible area of the Deerfield Ranger District.

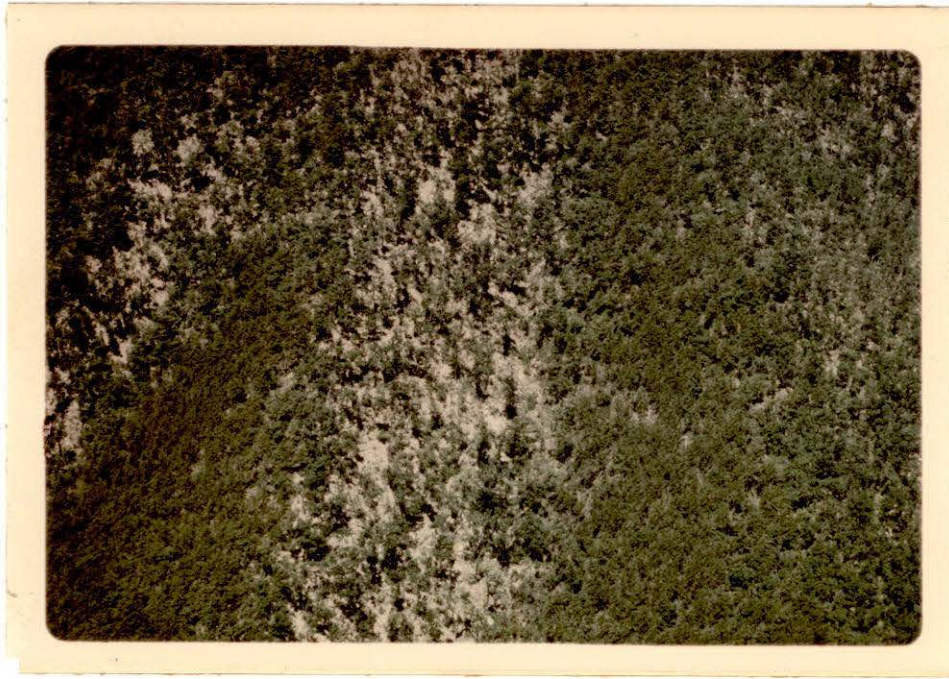


Fig. 4. Uprooted trees as seen from the air following ice storm damage.



Fig. 5. Defoliation (oviposition damage) caused by the periodical cicada.

GEORGE WASHINGTON NATIONAL FOREST

Virginia and West Virginia

RESULTS OF AERIAL DETECTION SURVEY July 5-6, 1978

Crew: Charles Dull, FIDM
George Blomstrom, Dry River Ranger District
Larry Bonner, Dry River Ranger District
Ronald Swan, Lee Ranger District
Jim Roberts, Warm Springs Ranger District

Aircraft: Cessna 182

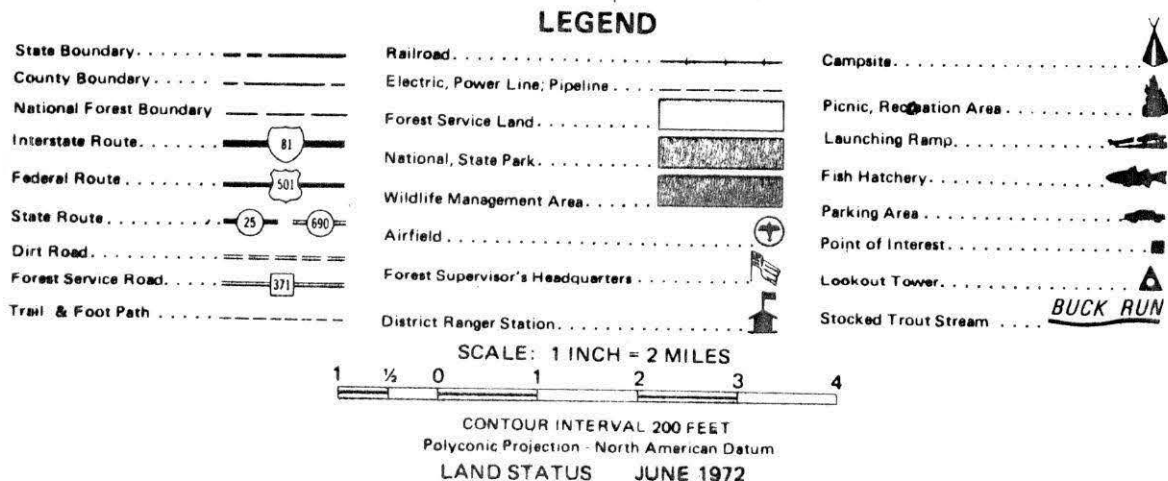
Acreage Surveyed: 1,795,000 acres



ICE DAMAGE

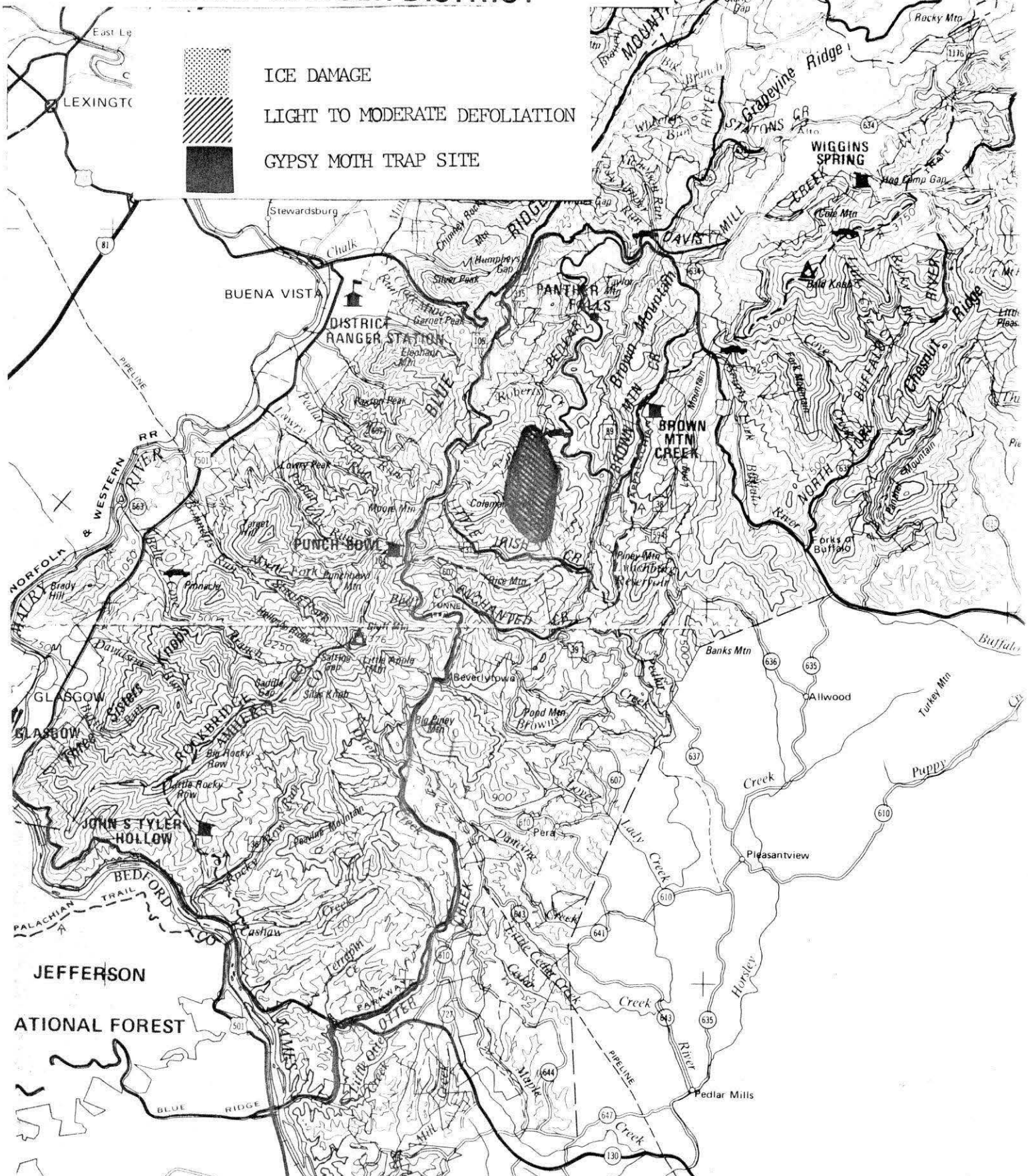
LIGHT TO MODERATE DEFOLIATION

GYPSY MOTH TRAP SITE



GEORGE WASHINGTON NATIONAL FOREST

PEDLAR RANGER DISTRICT



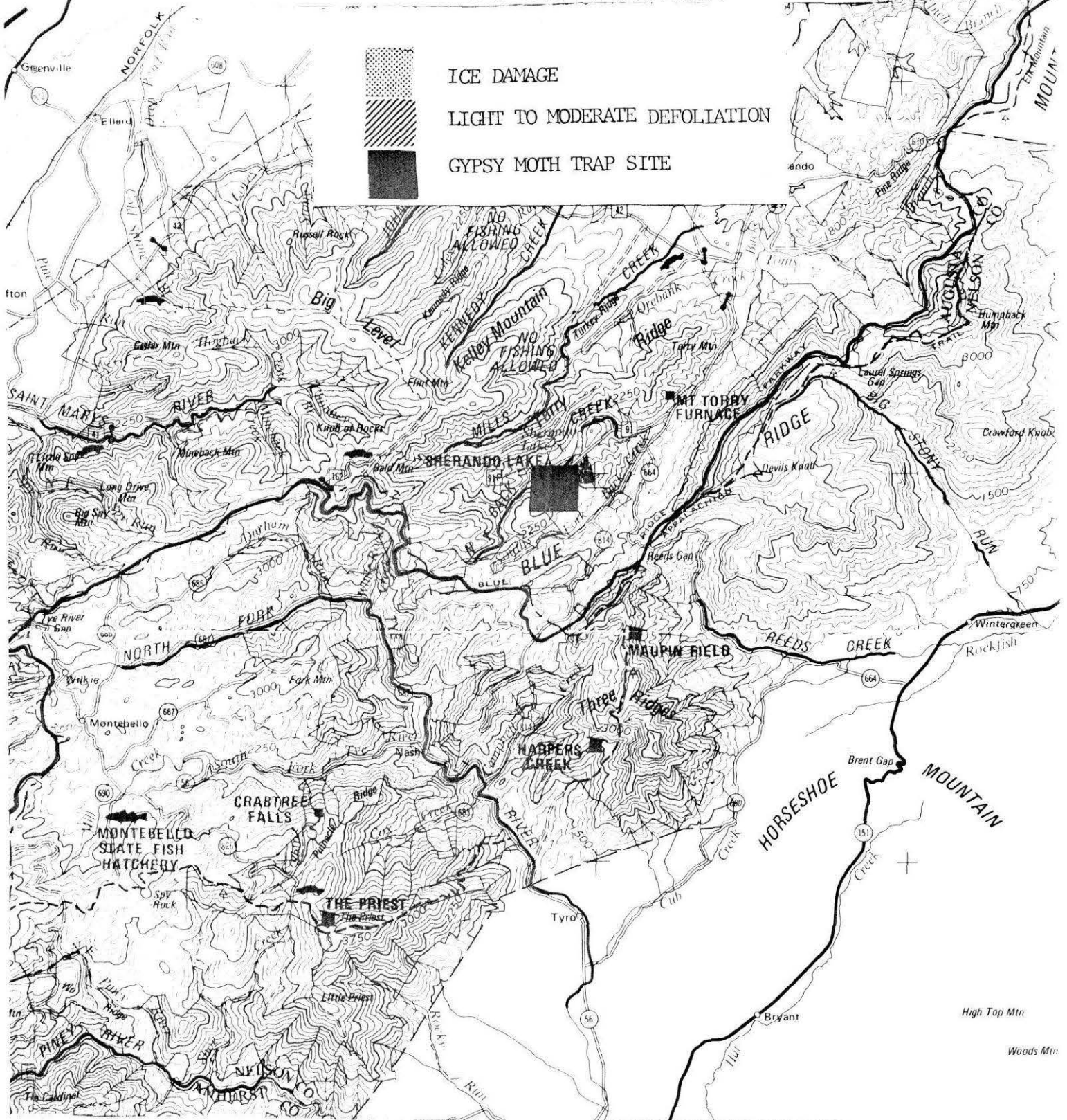
PEDLAR RANGER DISTRICT



ICE DAMAGE

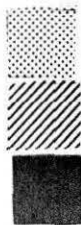
LIGHT TO MODERATE DEFOLIATION

GYPSY MOTH TRAP SITE



GEORGE WASHINGTON NATIONAL FOREST

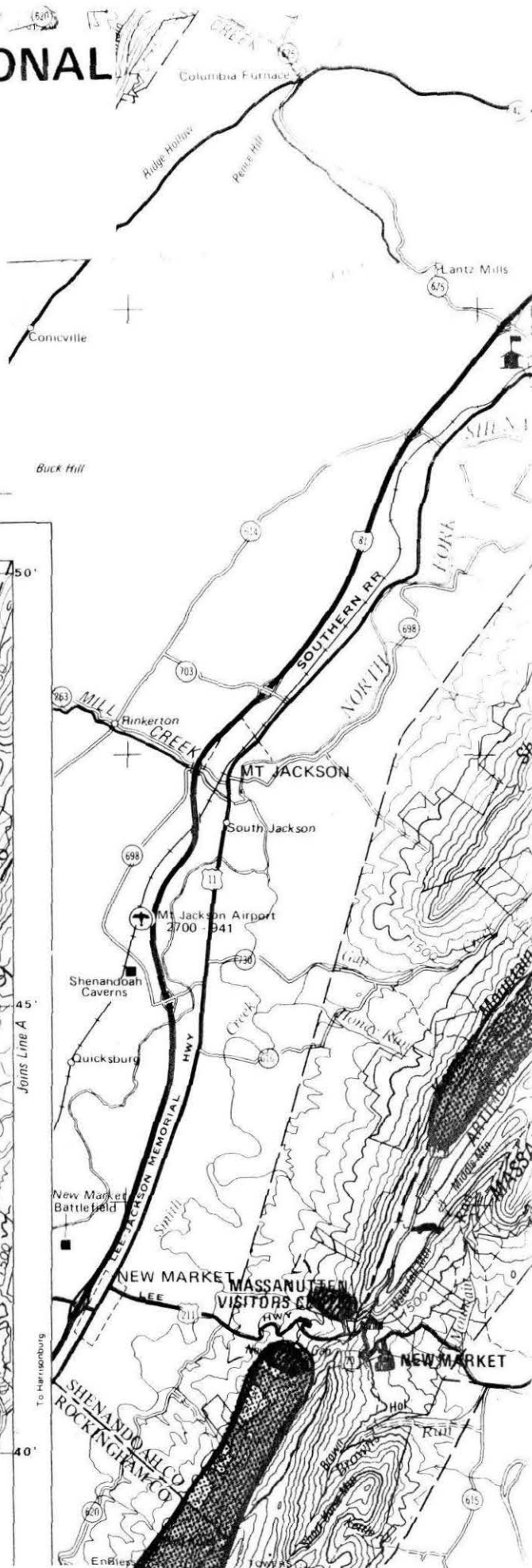
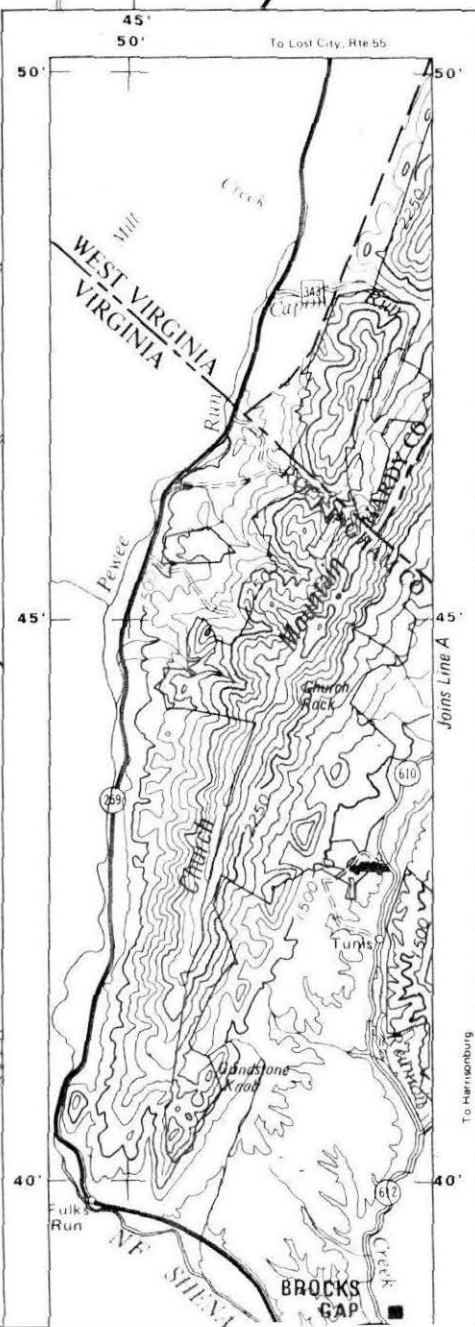
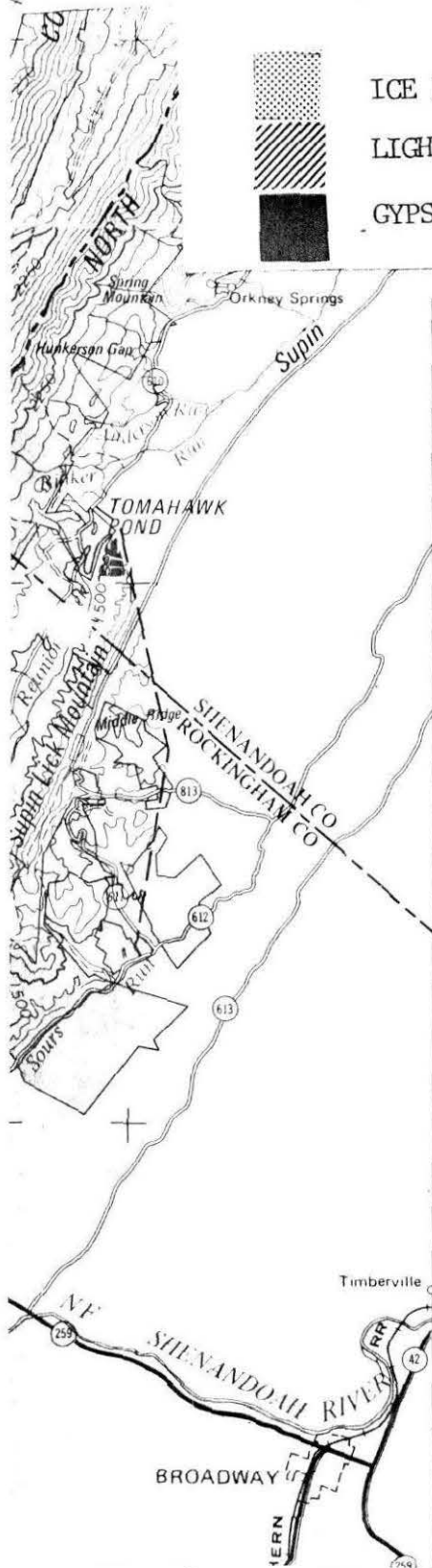
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ICE DAMAGE

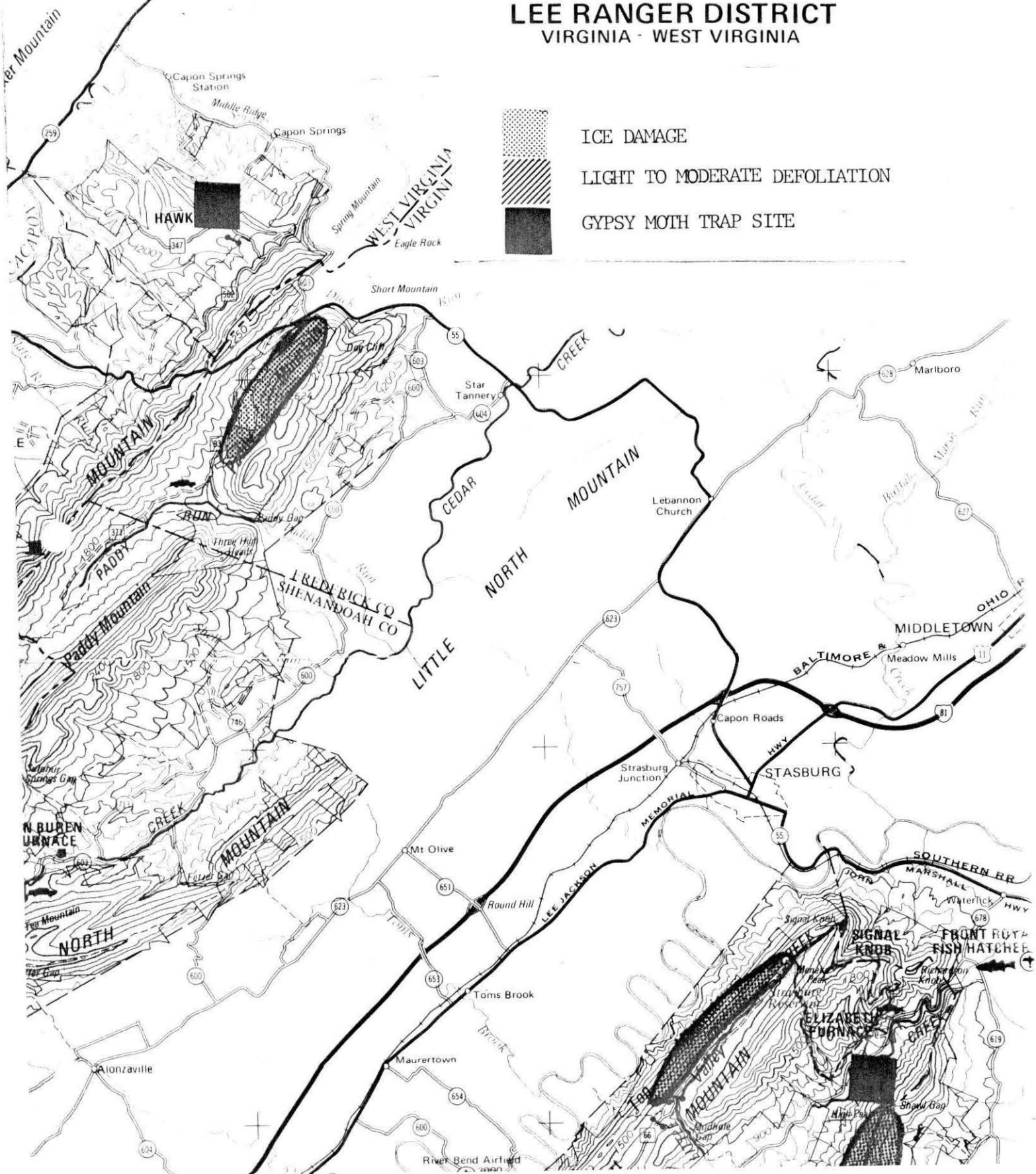
LIGHT TO MODERATE DEFOLIATION

GYPSY MOTH TRAP SITE



GEORGE WASHINGTON NATIONAL FOREST

LEE RANGER DISTRICT VIRGINIA - WEST VIRGINIA



GEORGE WASHINGTON NATIONAL FOREST

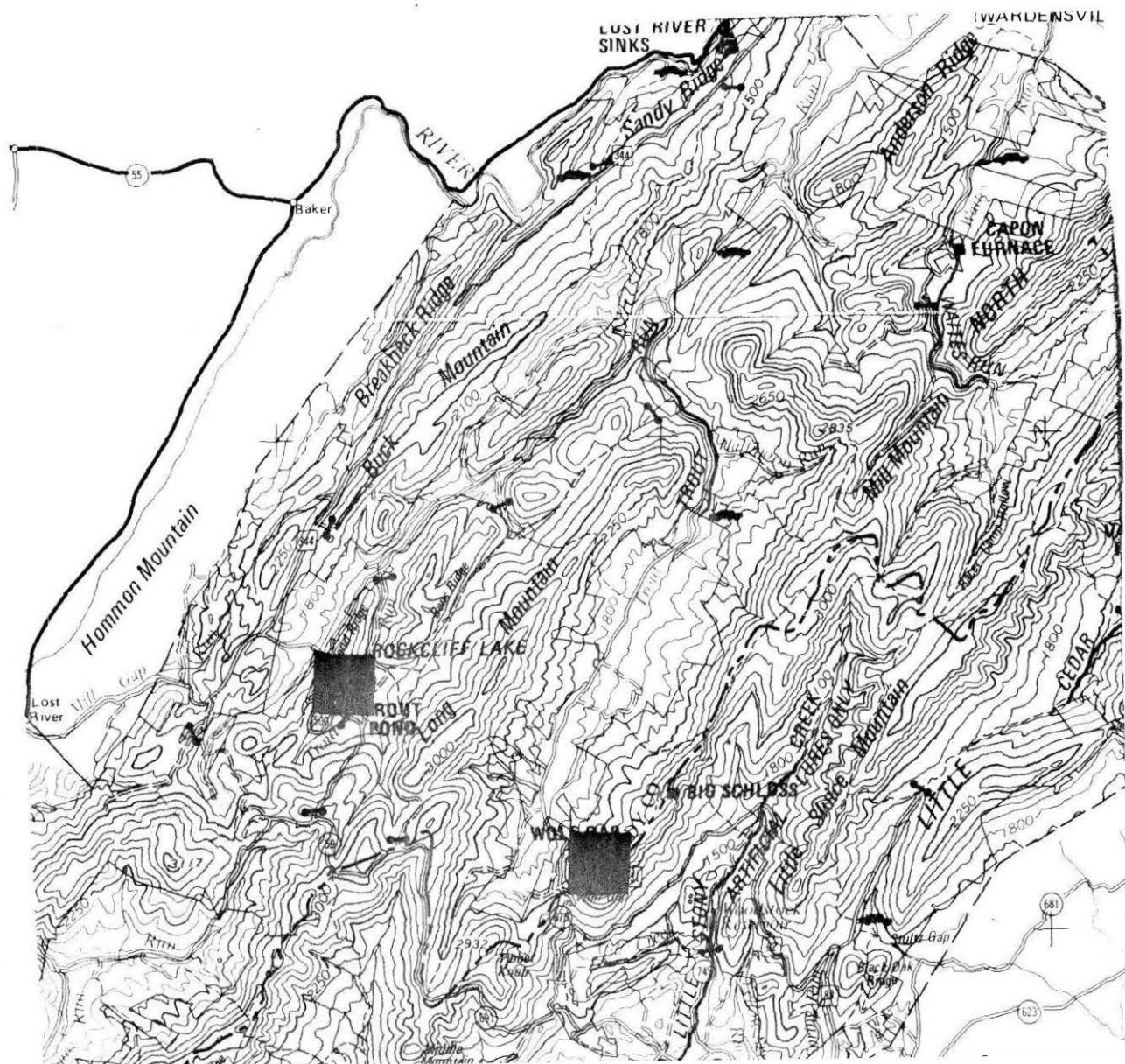
LEE RANGER DISTRICT VIRGINIA - WEST VIRGINIA



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION

GYPSY MOTH TRAP SITE



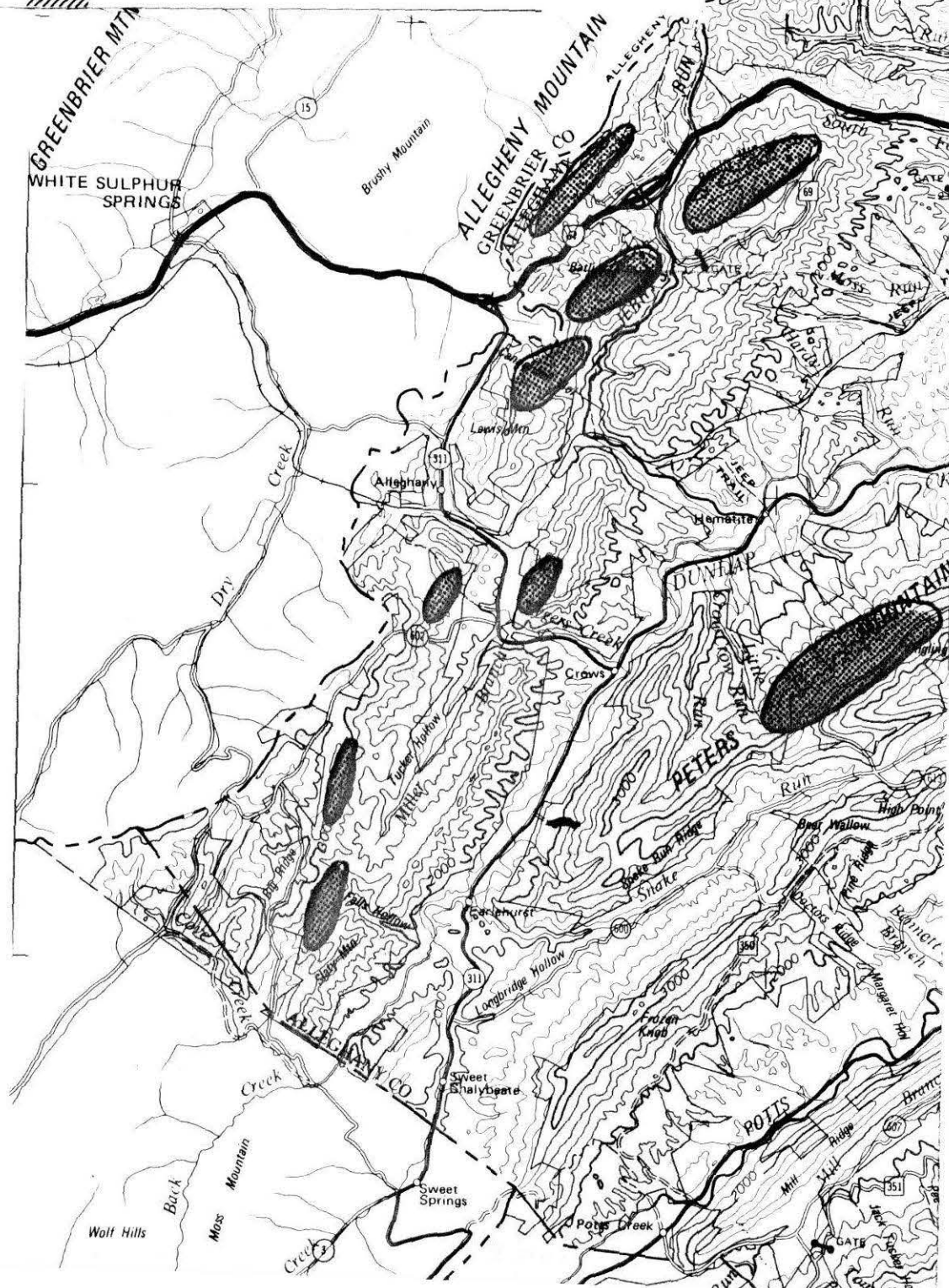
GEORGE WASHINGTON NATIONAL FOREST

JAMES RIVER RANGER DISTRICT



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



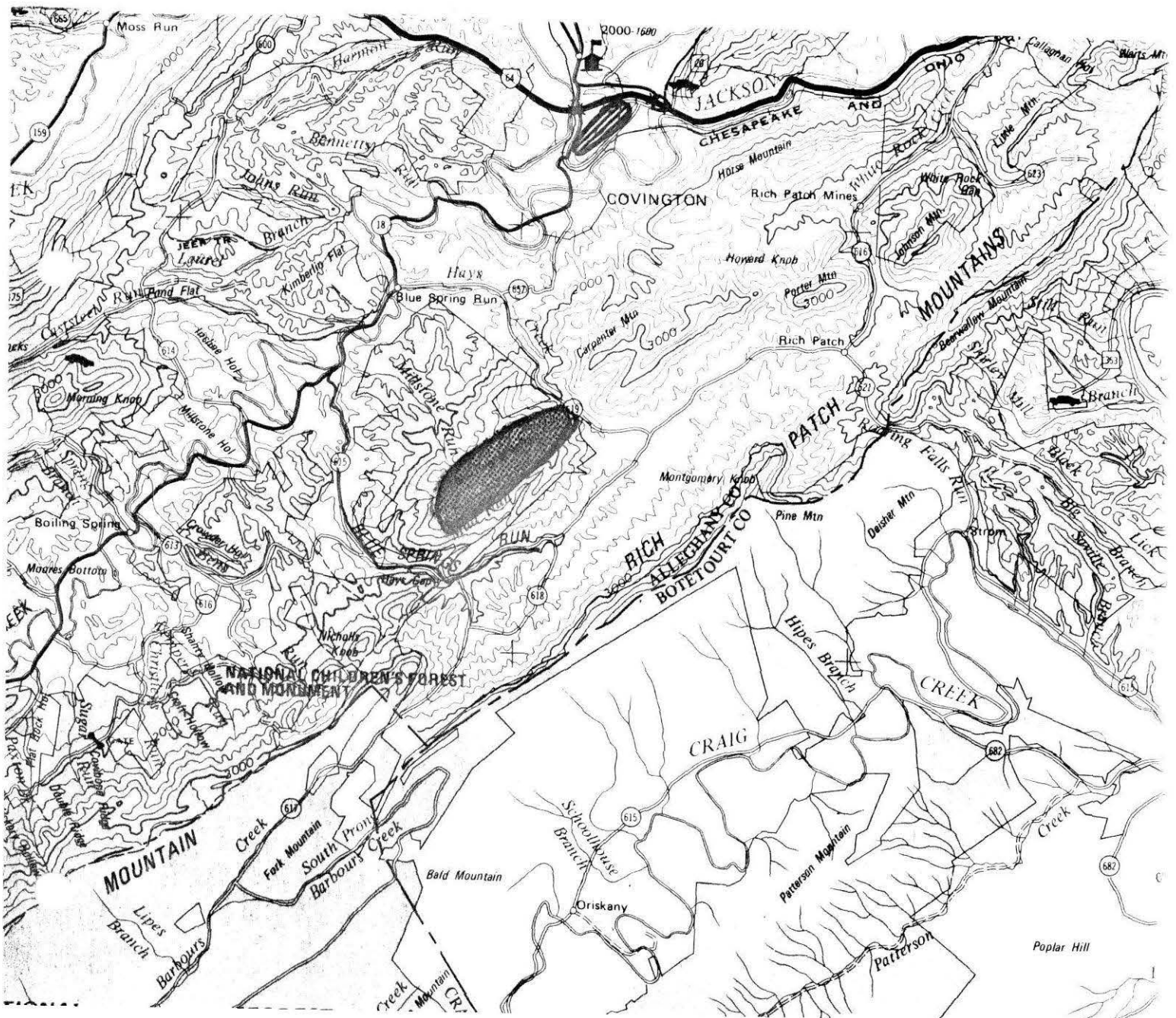
GEORGE WASHINGTON NATIONAL FOREST

JAMES RIVER RANGER DISTRICT



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



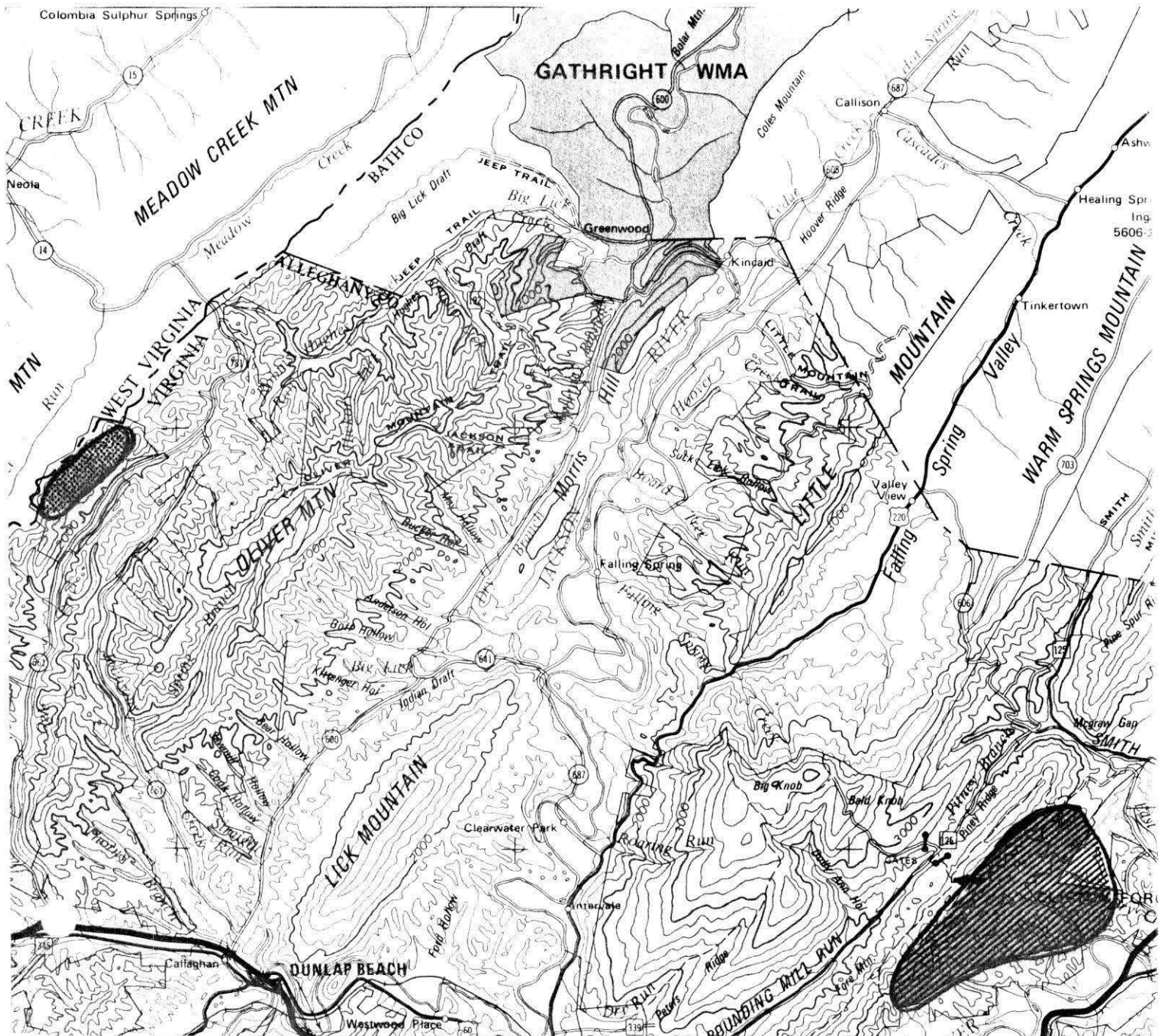
GEORGE WASHINGTON NATIONAL FOREST

JAMES RIVER RANGER DISTRICT



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



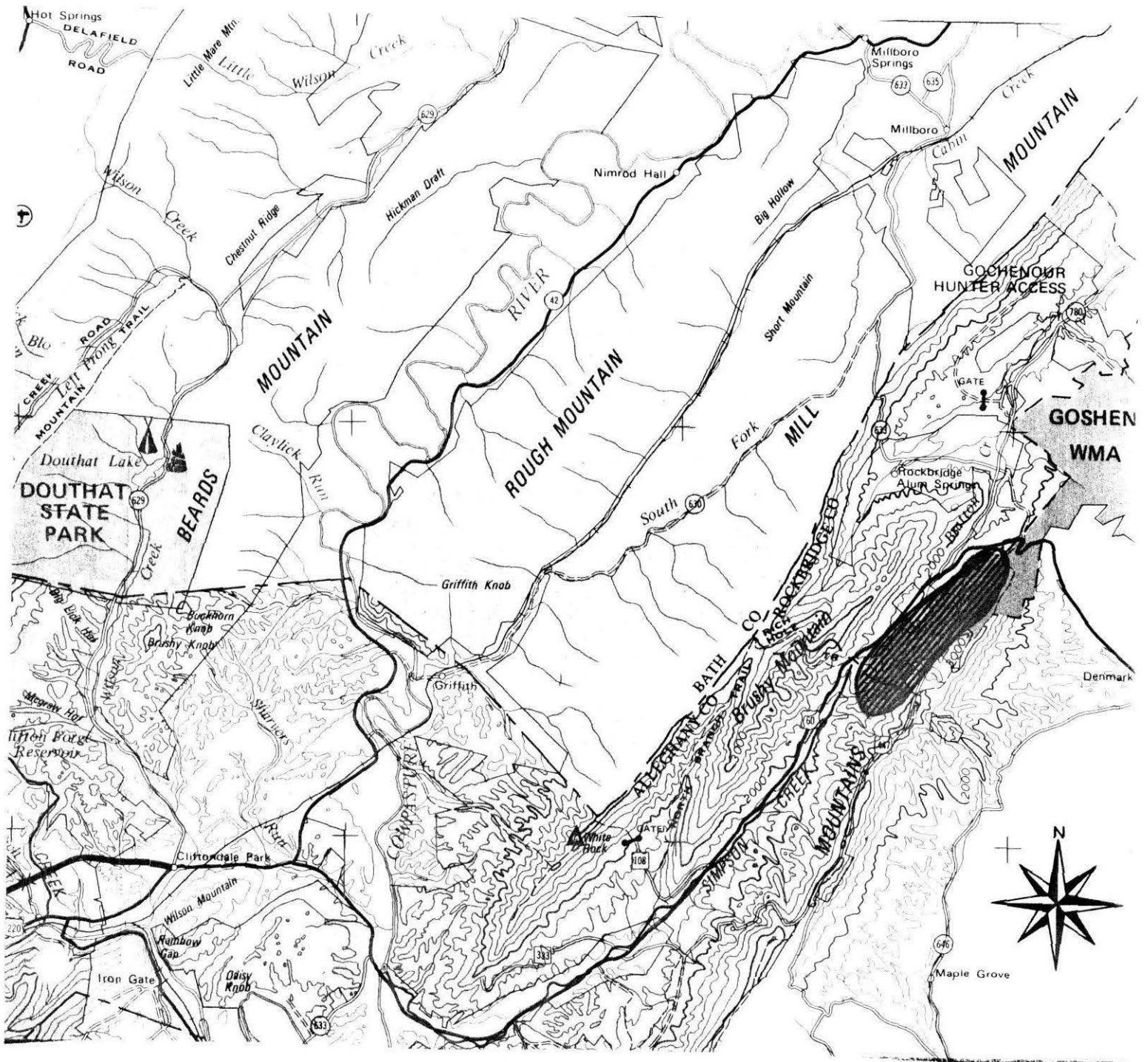
GEORGE WASHINGTON NATIONAL FOREST

JAMES RIVER RANGER DISTRICT



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



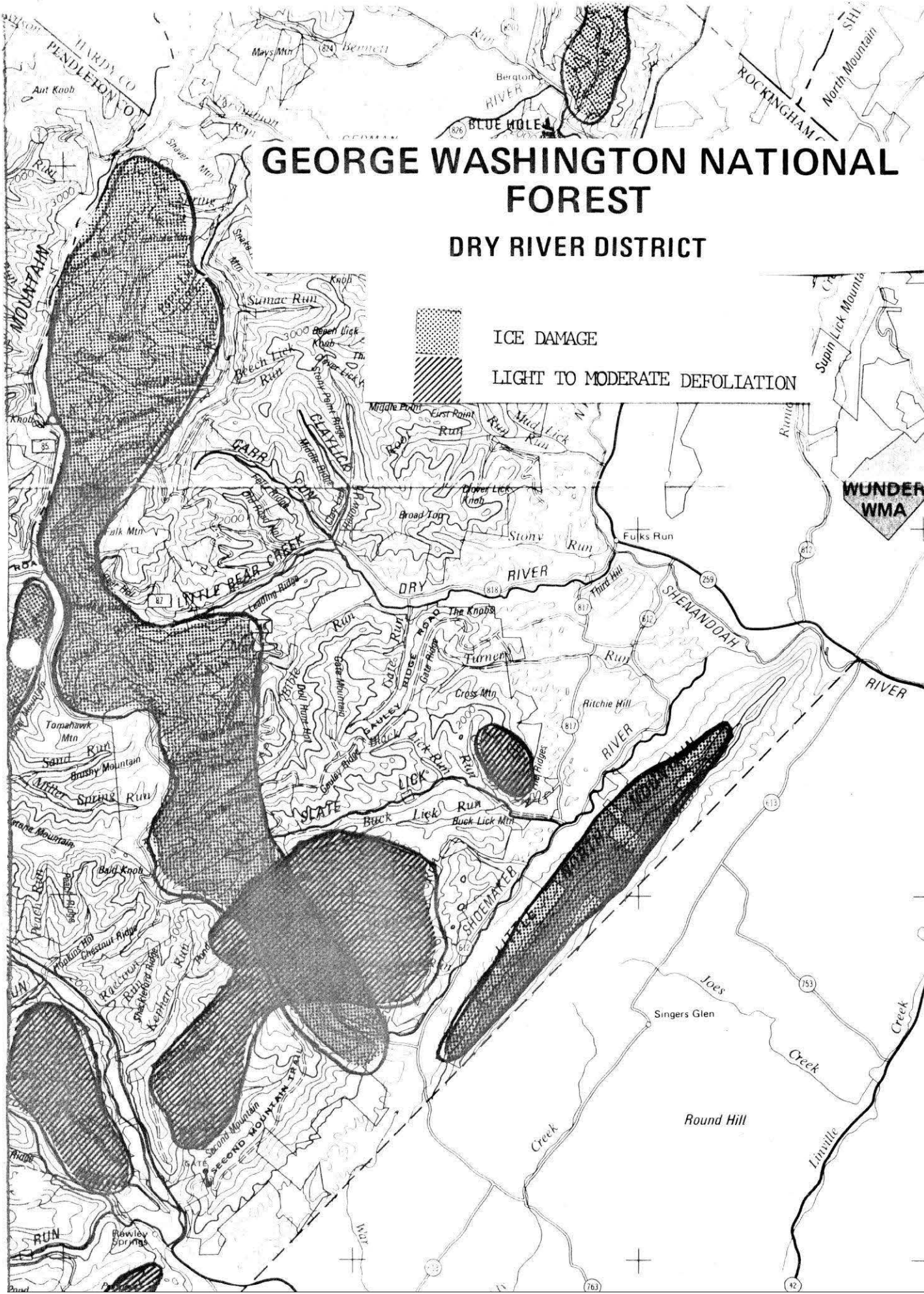
GEORGE WASHINGTON NATIONAL FOREST

DRY RIVER DISTRICT

ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION

WUNDER WMA



DRY RIVER DISTRICT



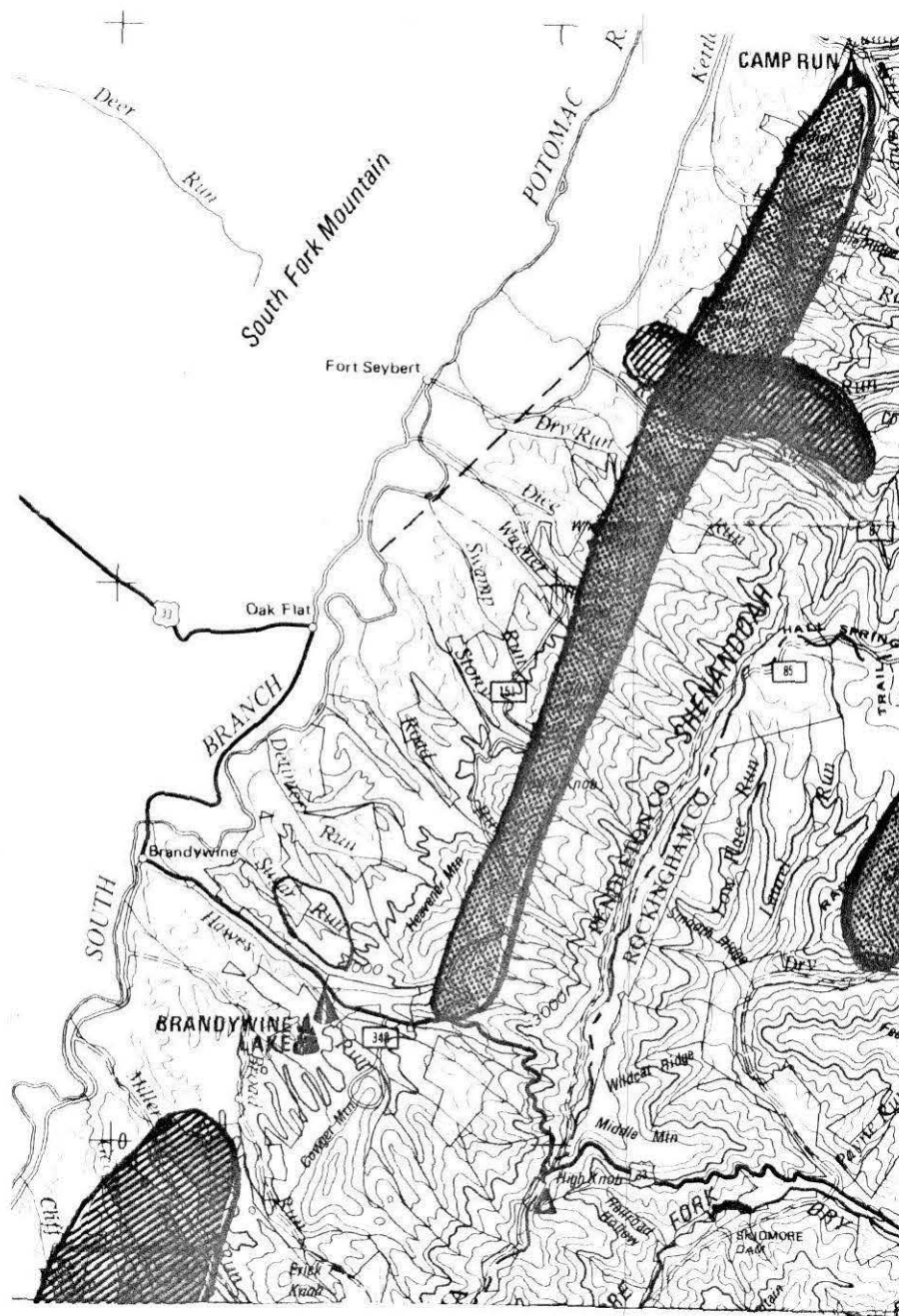
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DRY RIVER DISTRICT

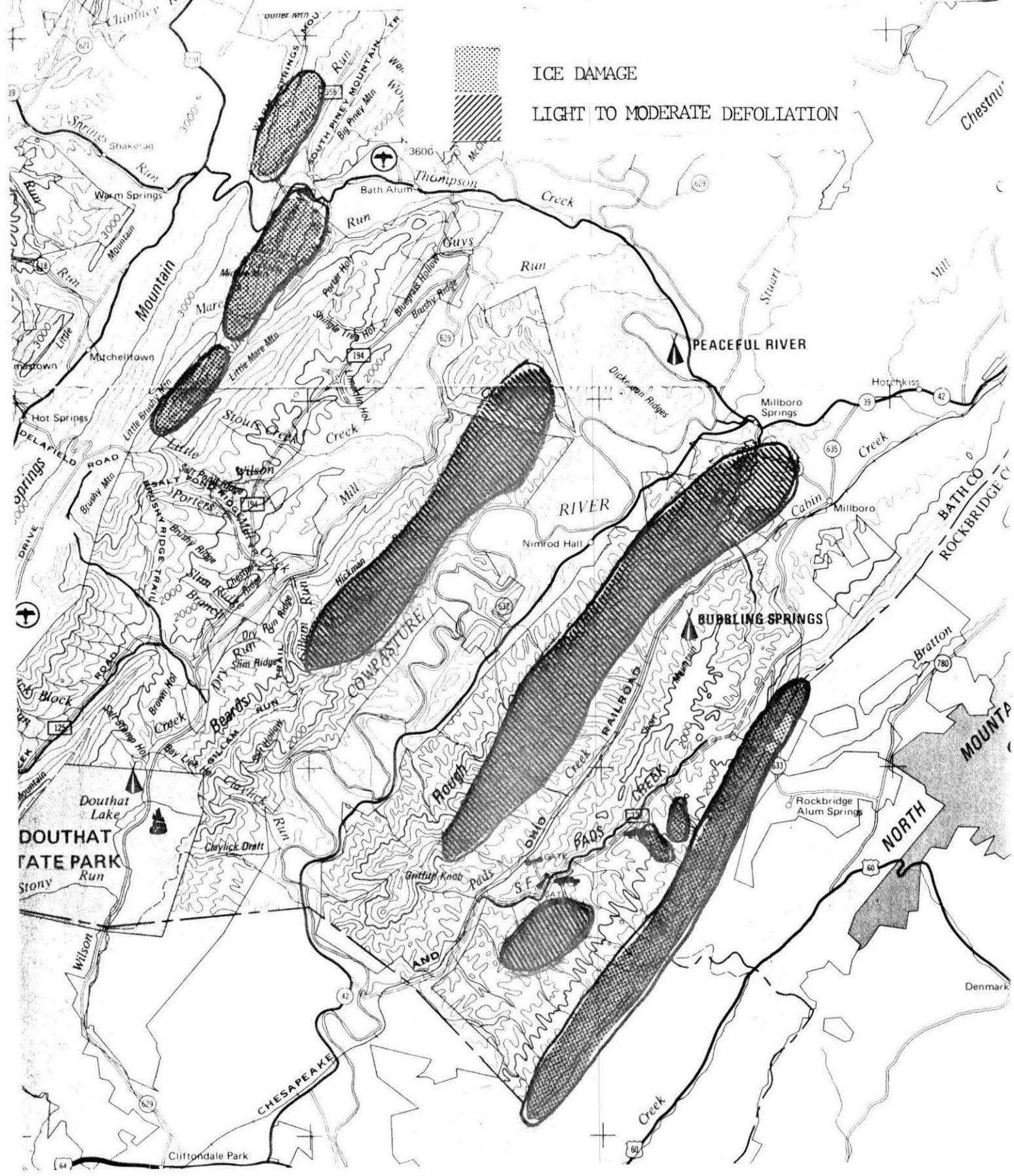


ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



WARM SPRINGS DISTRICT



GEORGE WASHINGTON NATIONAL FOREST

WARM SPRINGS DISTRICT



ICE DAMAGE

LIGHT TO MODERATE DEFOLIATION



DEERFIELD RANGER DISTRICT

LIGHT TO MODERATE DEFOLIATION

